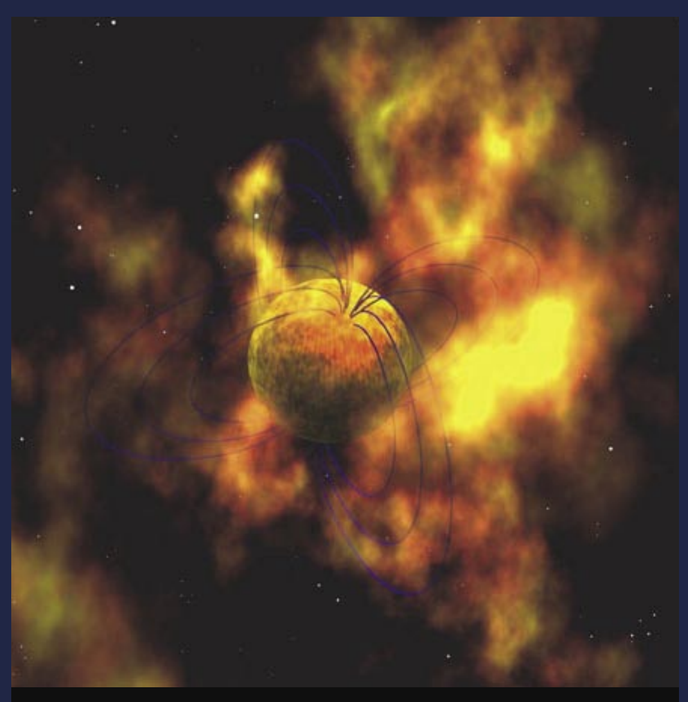
Recent Science News

A Neutron Star Emerges As A Rare Magnetic Gem

28 January 2004

By chance, a group of lucky astronomers at NASA's Goddard Space Flight Center were looking in just the right place at the right time in July 2003. They witnessed a neutron star as it was shedding its dim and dull existence of millions of years and transforming itself into a bright and exotic ultra-magnetic object called a magnetar. A magnetar's magnetic field is strong enough to strip the information off of your credit card at at distance of 100,000 miles. Only ten magnetars are known to exist in the whole Universe, so this was a real gem of a find.

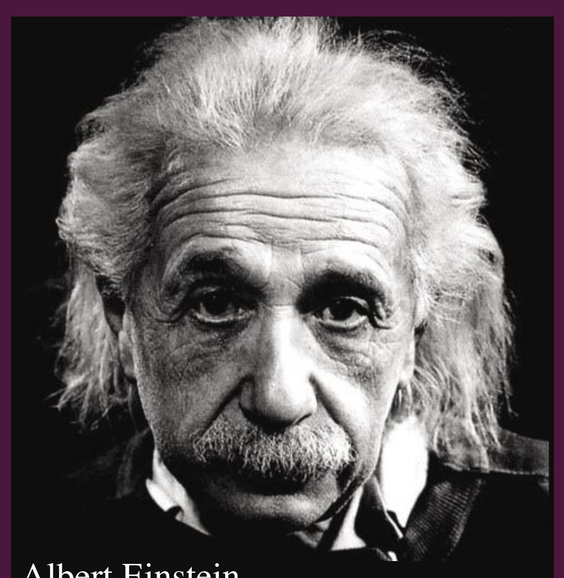


An artist's concept of a magnetar. The dark lines extending from the magnetar's pole represent its powerful magnetic field, strong enough to make it glow in X-rays.
(Credit: Dr. R. Mallozzi, University of Alabama, Huntsville.)

Einstein Makes Extra Dimensions Toe The Line

17 December 2003

Scientists have long hoped to unite the theories of gravity and quantum mechanics into one "theory of everything" to describe all aspects of nature. But unifying theories such as quantum gravity or string theory may require violations of Einstein's special relativity. Dr. Floyd Stecker of NASA's Goddard Space Flight Center investigated this by searching for variations in the constancy of the speed of light using gamma-ray and X-ray observations of two nearby galaxies containing supermassive black holes. What he found rules out some theories predicting extra dimensions. "What Einstein worked out with pencil and paper nearly a century ago continues to hold up to scientific scrutiny," said Dr. Stecker.



Albert Einstein
(Photo by Philippe Halsman. © Halsman Estate)

Read the rest of these stories and others on the video monitor on this display. Select "News" on the screen.

Also on the monitor, find out more about X rays, gamma rays, gravitational waves, cosmic rays, and the other exotic things scientists study at NASA Goddard Space Flight Center's Laboratory for High Energy Astrophysics.

Pulsars That Rock Space and Time

02 September 2003

Imagine a bright and beautiful spherical rock, about 10 miles across, packed so tightly and spinning so quickly that it actually shakes the fabric of space as if it were a bowl of Jello. That describes a pulsar, the core remains of an exploded star, containing the mass of our Sun compressed into the size of that small rock. Using NASA's Rossi X-ray Timing Explorer telescope, scientists have found evidence that pulsars may be rattling space and producing ripples called gravitational waves within our own Milky Way galaxy. Pulsars are the fastest spinning stars in the Universe. And the faster a pulsar spins, the more gravitational waves it creates.

Artist's conception of pulsar and gravitational waves.
(Credit: Dana Berry)